University of Illinois Champaign-Urbana March 11-12

1960

ENGINEERING OPEN HOUSE

Souvenir Program

A WELCOME TO OUR 1960 OPEN HOUSE VISITORS!

From the Dean:

A most cordial welcome from all of us in the College of Engineering. We are glad to have this opportunity to show you the work and education of an engineering student and how he is prepared to meet the exciting challenge of the "space age."

Especially we would like you to be aware of the breadth and diversity of our resources here, and the hundreds of educational and research projects we are pursuing for the benefit of our State and Nation. You are welcome visitors, both as friends of engineering and the University, and as citizens of Illinois. We wish you a pleasant, informative, and profitable stay.

W. L. Everitt
Dean, College of Engineering

From the Students:

Representing the student body of the College, we too are happy that you can come to visit our Open House, and we hope that your time with us will be most enjoyable. An event as extensive and complex as this would be impossible without untold hours of preparatory work by many individuals. As the central administrative student committee, we would like to thank them all—faculty members, committee chairmen and members, and student representatives from all departments of the College.

Once again we say, Welcome to Open House!

Louis Lanzerotti
General Chairman

Vice Chairmen:

Publicity— Tom Murley

Coordinating Committee— John Raffl

Art and Photography—Phil Weibler

High School Publicity— John Huttenhoff

Secretary-Treasurer— Norman McCormick

Physical Arrangements— Ron Haky

Prof. E. C. McClintock—*Adviser*

INFORMATION

Headquarters for the 1960 Engineering Open House are located in Room 57 of the Electrical Engineering Building. Questions about Open House, the College of Engineering, and the University will be answered here. Sponsors are also requested to register their groups. Information about specific departments of the College will be supplied at information booths located near the principal departmental exhibits.

TIME OF OPERATION

The 1960 Open House will be held from 10:00 A.M. to 9:00 P.M. on Friday, March 11 and 9:00 to 5:00 on Saturday, March 12.

PARKING

Free parking areas will be marked for Open House visitors, and visitors' parking permits will be available at Open House Headquarters.

FOOD SERVICE

The cafeteria located in the basement of the Illini Union serves lunch from 11:30 A.M. to 1:15 P.M., and the soda fountain is open from 2:00 to 4:30 P.M. The serving line is shortest after 12:20. The Bevier Hall cafeteria (new home economics building) will be open on Friday only from 11:30 to 12:30. In addition, there are many restaurants in the campus business district.

TEXTBOOK EXHIBIT

A display of textbooks used in College of Engineering courses has been prepared by Tau Beta Pi, the all-engineering scholastic honorary fraternity. Questions about the College, curricula, and student preparation will also be answered at the Tau Beta Pi counseling display in Room 154, Mechanical Engineering Building.

GUIDED BUS TOURS

To Betatron, Power Plant, Illinois Central Railroad exhibits. Free buses leave every half hour from the corner of Burrill and Green Streets, at Civil Engineering Hall, for the Betatron, power plant, and railroad exhibits. The railroad equipment, including a diesel locomotive, standard coach, dynamometer car, caboose, and road bed maintenance machinery, will be spotted on the University siding near Abbott Power Plant at the Stadium Drive Underpass. During the trips, Tau Beta Pi guides on the buses will indicate points of campus interest.

ST. PAT'S BALL

The Open House weekend will be climaxed Saturday night by St. Pat's Ball, honoring the patron saint of engineering. St. Pat himself will be there to bestow the title "Knight of the Order of St. Pat" on some dozen seniors who have distinguished themselves in service to the College of Engineering. Open House guests are cordially invited to attend the dance, which begins at 9:00 p.m. in Huff Gymnasium. Tickets may be purchased at the Illini Union Box Office.

AERONAUTICAL ENGINEERING

Aero. Lab. B

Aero-Structures Testing—demonstration of design evaluation techniques

Flight Regime Problems—analog computer in complex astronautic calculations

Glider—shows characteristics of unpowered and soaring flight

Ground Effect Vehicle and Helicopter—flying models demonstrate vertical and cushioned flight principles

Movies—on missile technology and modern aircraft

Photoelastic Structure Tests—use of polarized light to analyze designs

Ram Jet—working model illustrates the concepts of jet propulsion

Shock Tube—supplies supersonic air velocities for short durations

Smoke Tunnel—visual representation of air flow over airfoil shapes

Tesla Turbine and Peripheral Compressor—new power stage for lightweight turboprop engines

Cutaway Engine Models—turboprop, turbojet, rocket, and pulsejet engines

Aero. Lab. A

Plasma-Jet Generator—propulsion means for space vehicles

Rocket Motor—working engine demonstrates rocket principles

Subsonic Wind Tunnel—wing flutter and turbulence effects

AGRICULTURAL ENGINEERING

Display tent on Burrill Street

Field Tile Flow Line—flow of water in subsurface drainage tile

Water Control Structures—scale models demonstrate hydraulic designs

Soil Erosion Control—scale models show structures and methods

Sprinkler Irrigation—scale model of complete system

(continued next page)

Student-designed and produced experimental ground-effect and vertical-take-off vehicle demonstrated in Aeronautical Engineering

AGRICULTURAL ENGINEERING continued

Farmstead Model—detailed layout of complete operation

Truss Testing—model of machine used to test building trusses

Automatic Feeding—model of livestock feeding system

Pneumatic Materials Conveying System—model demonstration

Automatic Guidance System—tractor with remote controls

Tractor Transmissions—cutaways of automatic and conventional transmissions

Corn Planter—display of working mechanism

Fuel Cell Tractor—direct conversion of propane gas to electricity for power

Aeromobile—peripheral hovering machine for use over rough terrain

CERAMIC ENGINEERING

Ceramics Building

Ceramic Fabrication Processes—dry mixing and pressing, plastic mixing and extrusion, ceramic shape-forming equipment

Survey of Ceramic Industry—applications of ceramics and ceramic engineering to everyday life

Movies—research, processes, and production in the ceramic industry

Porcelain Enamels—operating display of porcelain applied to metals

Strength of Ceramic Materials Demonstration—varied types displayed

Through the Fires to Perfection—techniques to prepare ceramic materials for practical use

Ceramic Souvenirs—make your own earrings and cuff links

CHEMICAL ENGINEERING

East Chemistry Building

Chem-Pop—free refreshment for visitors

All-Glass Distillation Unit—as used in multicomponent system separation

Rotary Filter—continuous solid-liquid separation methods

Radio-Chemistry—use of Geiger counter and radiation detection

Hilsch Tube—how to defy the laws of thermodynamics

Temperature Measurement—simple and complex methods in chemical processes

Chem Magic Show—mysteries of chemistry every hour on the hour; Room 116

Movies—rest while you watch the Chemical Engineer at work; Room 115

CIVIL ENGINEERING

Civil Engineering Hall

Construction—various stages of erecting buildings; student design problems

Highways—progressive traffic movement with traffic lights; model of an interstate interchange; student designs

Hydraulics—student-constructed model of a town, with reservoir, water supply, sewage treatment, and flood control; model of highway culvert

Railway—railroad equipment models; Illinois Central Railroad equipment on Abbott Power Plant siding

Sanitary—analysis and treatment of sewage and water—demonstrations

Structures—models of various structure types; foundation failure problems

Surveying—equipment display; application of modern surveying methods

Civil Engineering Research—carried out in the crane bay of Talbot Laboratory

ELECTRICAL ENGINEERING

Electrical Engineering Building

Van de Graaf Generator—100,000-volt display of static electricity

Electronics—Tic-Tac-Toe game, displays and applications of oscilloscopes; State Police speed radar; electronically-controlled ball
Radar—surrounding terrain observed by scanning beam from antenna
Sonar—distance measurement with sound waves, as in submarines
Kissometer; educated electronic duck; lie detector; ghost writer

Communication—UHF and microwave transmission over great distances; WPGU—student radio on the air; Synton Student Radio Club; hi fi music program

Transistors—interesting and useful applications of semiconductors

Magnetism—repelling iron balls; mutual repulsion in alternating magnetic fields; electromagnetic motor; electromagnetic cannon

(continued next page)

Time and motion study are demonstrated as part of laboratory practice in Industrial Engineering

ELECTRICAL ENGINEERING continued

Miscellaneous—strength tester; high current demonstration; electronic humidity control; Jacob's ladder; Tesla coil; Data-Fax for photos transmitted by wire; one-wire light control; electronic pumps; modulated light beams for voice communication; hand-eye coordination tester; ask-the-machine game; Theremin musical instrument; color organ plays illuminated music

Television—see yourselves as others see you on closed-circuit television

GENERAL ENGINEERING

Transportation Building

Careers in General Engineering—journalism, sales, management, and geology

New Reproduction Machines—microfilm, file cards, printers and viewers

Engineering Illustration—axonometric boards, airbrush, zipatone

New Drawing System—integrated orthographic-isometric projection

Architectural Drawing—shades and shadows, perspective, isometrics

Geological Graphics—applied descriptive geometry, charts and diagrams

Machine Drawing—industry techniques, standards, tolerances, orthographics

Graphic Aids—ellipse machine, lettering guides, pantograph, instruments

Graphical Computation—slide rules, alignment charts, and nomographs

Descriptive Geometry—size, shape, and spatial relativity of geometric forms

History of Engineering—growth of the art and science; engineering leaders

Enginering Law—patents, contracts, evidence, torts, equity, corporations

Motion Picture—engineering sales in the electronics industry

INDUSTRIAL ENGINEERING

135 and 235 M. E. Building

Linear Programming and Statistics—tolerance build-up and control; IBM 610 automatic decimal point computer; random sampling—demonstrating the theory of probability

Motion and Time Study—equipment display; wall charts; electric peg board; advantages of motion and time study

Plant Layout and Materials Handling—plant layout display; materials handling equipment—demonstration of a new concept; the mechanical man-model demonstrates correct ways of lifting loads

Safety—machine safety guards and controls; safety goggle endurance test; fire-fighting equipment display; dust explosion in model plant; fume control principles and methods

Tool Design—display of various types and methods

OPEN HOUSE TOUR

ENGINEERING CAMPUS

UNIVERSITY OF ILLINOIS

SPRINGFIELD AVENUE

AGRICULTURAL ENGR DISPLAY

FOUNDRY LAB

TALBOT LAB

AERONAUTICAL ENGR LAB (B)

ENGINEERING RESEARCH

NUCLEAR ENGR

MECHANICAL ENGR LAB

ELECTRICAL ENGR

RESEARCH LAB

ELECTRICAL ENGR BLDG

OPEN HOUSE HEADQUARTERS ROOM 57

CIVIL ENGR HALL

PHYSICS LAB

HEALEY ST

BONEYARD CREEK

STREET

BURRILL AVENUE

AVENUE

TRANSPORTATION

AERO LAB

MET LAB

MINING LAB

KILNS

CERAMIC ENGR

NUCLEAR RAD LAB

MECHANICAL ENGR

NUCLEAR REACTOR LAB

HYDRAULIC ENGR LAB

SANITARY ENGR LAB

HYDRAULIC ENGR BLDG

PHYSICS BLDG

GREGORY AVENUE

GREEN STREET

OPEN HOUSE BUS STOP — BUS TO POWER PLANT, BETATRON, AND ICRR

WRIGHT

ILLINI UNION

ALTGELD HALL (MATH)

NATURAL HISTORY BLDG

MATHEWS

BURRILL HALL

GOODWIN

ILLINOIS CENTRAL RAILROAD

ARMORY AVE

ABBOTT POWER PLANT

ADMINISTRATION BLDG

NOYES LAB OF CHEMISTRY

CHEMISTRY ANNEX

EAST CHEMISTRY BLDG

OAK STREET

GREGORY DRIVE

STADIUM DRIVE

FIRST ST

PHYSICS RESEARCH LAB

TO DRIVE TO THE POWER PLANT AND THE BETATRON IN THE PHYSICS RESEARCH LAB DRIVE WEST ON GREEN ST TO FIRST ST (FIRST STOP LIGHT WEST OF WRIGHT ST), TURN LEFT ON FIRST SIX BLOCKS TO STADIUM DRIVE AND TURN RIGHT. (SEE INSERT IN LOWER LEFT HAND CORNER OF MAP.)

ILLINOIS STREET

PLACE

CALIFORNIA STREET

GREGORY

NORTH

MECHANICAL ENGINEERING — Mechanical Engineering Building

Pi Tau Sigma—Mechanical Engineering Honorary Society—explanation of mechanical engineering curriculum

A.S.M.E.—student chapter of American Society of Mechanical Engineers—engineering opportunities open to graduate mechanical engineers

Automobile Exhibit—performance tests of automotive engines and chassis; display of modern automobiles

Heat Treatment of Metals—preparation for industrial usage

Metal Cutting—methods and research in techniques for industry

Welding—modern equipment and techniques

Machine Design—determination of forces and stresses in machine components

Foundry—demonstration of steps in making metal castings

Power Demonstrations—performance tests of prime movers; heating and ventilating equipment

Physical Environment Lab.—study of temperature and relative humidity effects on human comfort

METALLURGICAL ENGINEERING — Metallurgy Laboratory

Steelmaking Exhibit—steel production steps shown schematically

Brittle Fracture—effects of low temperatures on steel strength

Rolling Mill Demonstration—mechanical reduction of metal size

Corrosion in Action—galvanic cells; electroplating and polishing

Metal Casting—souvenir aluminum ashtrays produced each half hour

Structure of Steel—phase changes and heat treatment

Thermocouples—temperature measurement by joining two metals

Test Your Metals I.Q.—match metal characteristics and applications

Zinco—the wonder aluminum-zinc alloy; it heats up in your hand

40 Metals on Display—types ranging from lead to platinum

Gold-Cadmium Alloy—rubber-like temperature-responsive crystals

Metals Under the Microscope—visual identification methods

Crystal Models of Metals—atom arrangements in various systems

Movies—modern metallurgical processes

Photography in Metallurgy—permanent recordings of metal structures

MINING ENGINEERING — Mining Laboratory

Automatic Hoisting—skip lifting and automatic dumping of minerals

Diamond Drilling—core drilling equipment and core samples

Geophysical Prospecting Equipment—magnetic, gravimetric, and seismic devices

Dark Light and Radioactive Prospecting—short-wave and long-wave prospecting

Mineral Economics Charts—importance of Illinois mineral industries

Dressing Equipment—crushing, grinding, and separation of minerals

Roof Bolting Model—mine roof suspension methods

Slusher Loading Exhibit—dragline recovery of minerals

Ventilation—fans and air conditioning used for air supply in mines

PETROLEUM ENGINEERING — Mining Laboratory

Downhole Pump Display and Film—functioning of a mud-circulating pump used for oil well support

Electrical Pumping Unit—actual mud-circulating pump

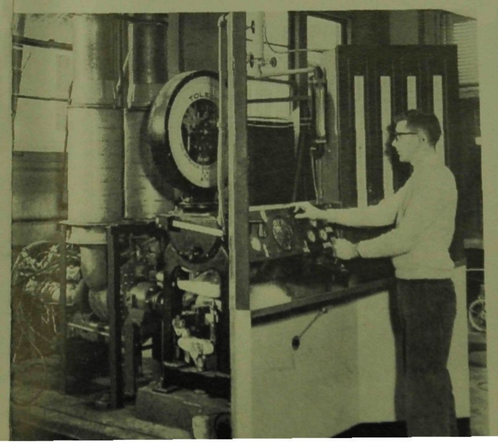
Well-Servicing Equipment—resistivity and self-potentials; determination of formations

PHYSICS — Physics Laboratory

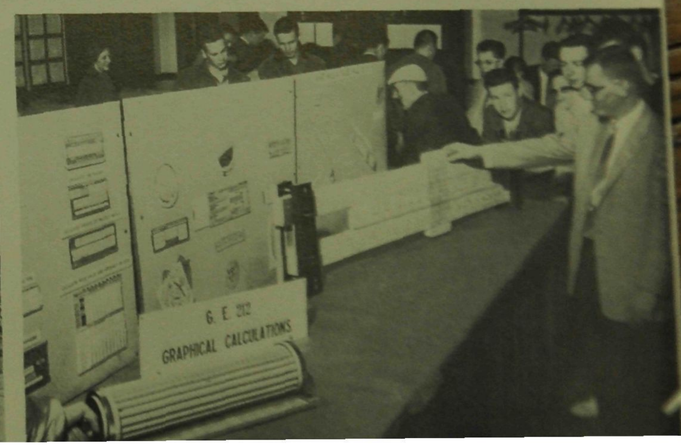
Mechanics—earth satellite motion and orbits, principles of rocket propulsion, colliding frictionless systems

Nuclear Physics—model of Van Allen radiation belts, Geiger counters, counter telescopes used to detect cosmic rays and radioactivity (continued next page)

New test stand and test methods for a modern gas turbine in the internal combustion laboratory of Mechanical Engineering.



Methods of graphical calculation and representation, plus illustration techniques, are demonstrated by General Engineering students.



PHYSICS continued

Optics—wave motion and interference, smoke box and lens demonstration, exhibit of new Land two-color photographic reproduction process

Thermodynamics—liquefied gases demonstrate changing properties of matter at low temperatures; student-made transparent geyser

Nuclear Radiation Laboratory

Cyclotron—use of electromagnetic and electrostatic means to impart high speeds to electrified particles. The particles are those used to bombard atomic nuclei, producing transmutations and artificial radioactivity.

Physics Research Laboratory

Betatron—electromagnetic acceleration of electrons to form a narrow beam of Beta rays, then used to generate high-voltage X-rays and to transmute elements. The 340, 80, and 24-million volt Betatrons will all be on display.

THEORETICAL AND APPLIED MECHANICS Talbot Laboratory

Compression of Large Concrete Cylinders—three-million-pound test machine, an important tool for full-scale evaluation of structural designs and construction methods, will be operated:

Friday: 11 a.m., and 2, 4, 7, 8, and 9 p.m. (on the hour)

Saturday: 11 a.m., and 1, 2, 3, and 4 p.m. (on the hour)

Behavior of Missiles in Rising from Water to Air:

Friday: 11:30 a.m. and 2:30, 4:30, 7:30, and 8:30 p.m.

Saturday: 11:30 a.m. and 1:30, 2:30, 3:30, and 4:30 p.m.

Surface Tension Phenomena—rope pump, water balls and rings

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Destructive compression test of a large concrete cylinder in the three-million-pound machine used by Theoretical and Applied Mechanics and Civil Engineering for research.

THEORETICAL AND APPLIED MECHS. continued

Hydraulic Jump—high-speed laminar flow contrasted with turbulent flow

Wind Pressures on a Model House—an example of fluid behavior

Vibrations—created and measured in various materials

Photoelastic Stress Measurement—loads pictured through plastic models

Strain Gages—measurement of small elongations in materials

Members Subjected to Loadings—tension, compression, and torsion

Short-time Creep Behavior—continued stretching under constant loads

Fatigue of Metals—testing of materials subjected to repeated loads

NUCLEAR ENGINEERING M. E. Laboratory Building

Subcritical Assemblies—three units, two uranium-graphite and one light-water-uranium, will be on display with appropriate neutron counting equipment in operation

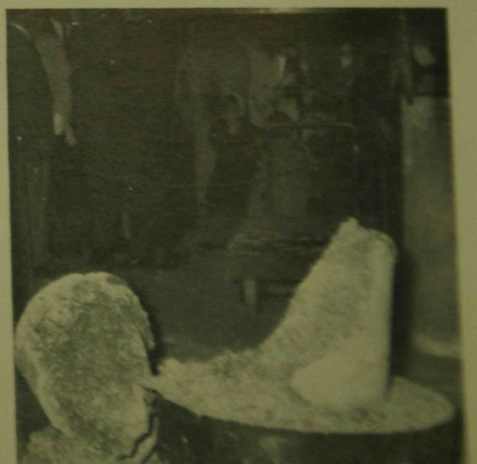
Boiling-water Loop—designed to simulate the heat-transfer conditions of nuclear reactors, this high-capacity loop will be explained for those interested

Nuclear Metallurgy Laboratory—special facilities for uranium processing, fuel-element fabrication, and other nuclear problems will be displayed for those with special interests

Reactor Laboratory

100-Kilowatt Training and Research Reactor—the University of Illinois critical reactor is in process of construction, and its laboratory building is nearly completed. See current tour information for latest word on extent to which construction activity will permit inspection.

Left—proving sensitivity of the controls by cracking a peanut; 2 and 3—the actual break-up of the cylinder under more than one-million-pound load; right—the remains.



MATHEMATICS

260 Electrical Engineering Building

Scope of Mathematics—as a discipline closely related and essential to engineering, as well as a science in its own right, mathematics should excite the curiosity of Open House visitors. Fields of mathematics will be displayed and explained, with practical applications to engineering and other professional careers.

RADIO-ASTRONOMY

257-254 Electrical Engineering Building

University Activities—members of the Astronomy Club will display and explain the University's equipment and activities in exploration of the atmosphere and space by radio waves. Projects will include the Moonbeam antenna (theme of this year's Open House), the 400x600' radio-telescope now under construction near Danville, satellite tracking by interferometer and reflection methods, and auroral effects on radio waves both from earth and from satellites.

AIR FORCE R.O.T.C.

260 E. E. Building

Air Power in Education—sponsored by Detachment 190, AFROTC

Jet Engine Cutaway Model—parts and relations clarified

Pilot's Personal Equipment—safety and efficient operation

ARMY R.O.T.C.

Signal Corps

A. P. News Service—teletype signals via radio

Telephone Communication—field phones connected and operating

F.M. and A.M. Radio—shows similarity to commercial equipment; constructed to army specifications

Teletype Communication—teletypewriters operated through walkie-talkies

Corps of Engineers

Bridges—fixed and floating models

Mines and Demolition Techniques—explanations, and explosive models

Terrain Model—illustrates troop operations

Army Map Service—district engineers construction projects

Ordnance

Models and Photographs—army ordnance in the space age

Small Arms—.30 caliber M-1 rifle, M-2 carbine, and other arms

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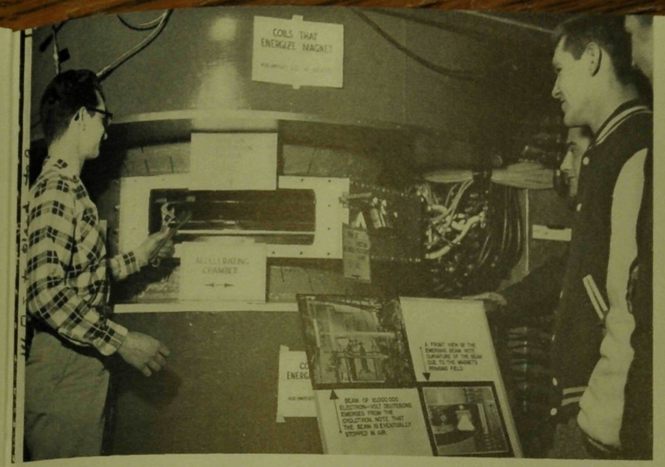


Open House visitors inspect the Cyclotron, one of several nuclear particle accelerators used in University of Illinois Physics research

ARMY ROTC continued

Crew-Served Weapons—81 mm. mortar, 51 mm. rifle, .30 caliber machine gun

Inert Explosives—dummies of ammunition and charges used in the army

NAVAL R.O.T.C.

152 and 154 M. E. Building

Manual Aircraft Control—servomechanisms demonstrate flying methods

Gyroscopic Altitude Control—demonstration of autopilot methods

Movie—color film shows the *Sidewinder* air-to-air missile

Models—*Nautilus* - atomic-powered submarine of polar fame
Patrick Henry - atomic-powered ballistic missile submarine

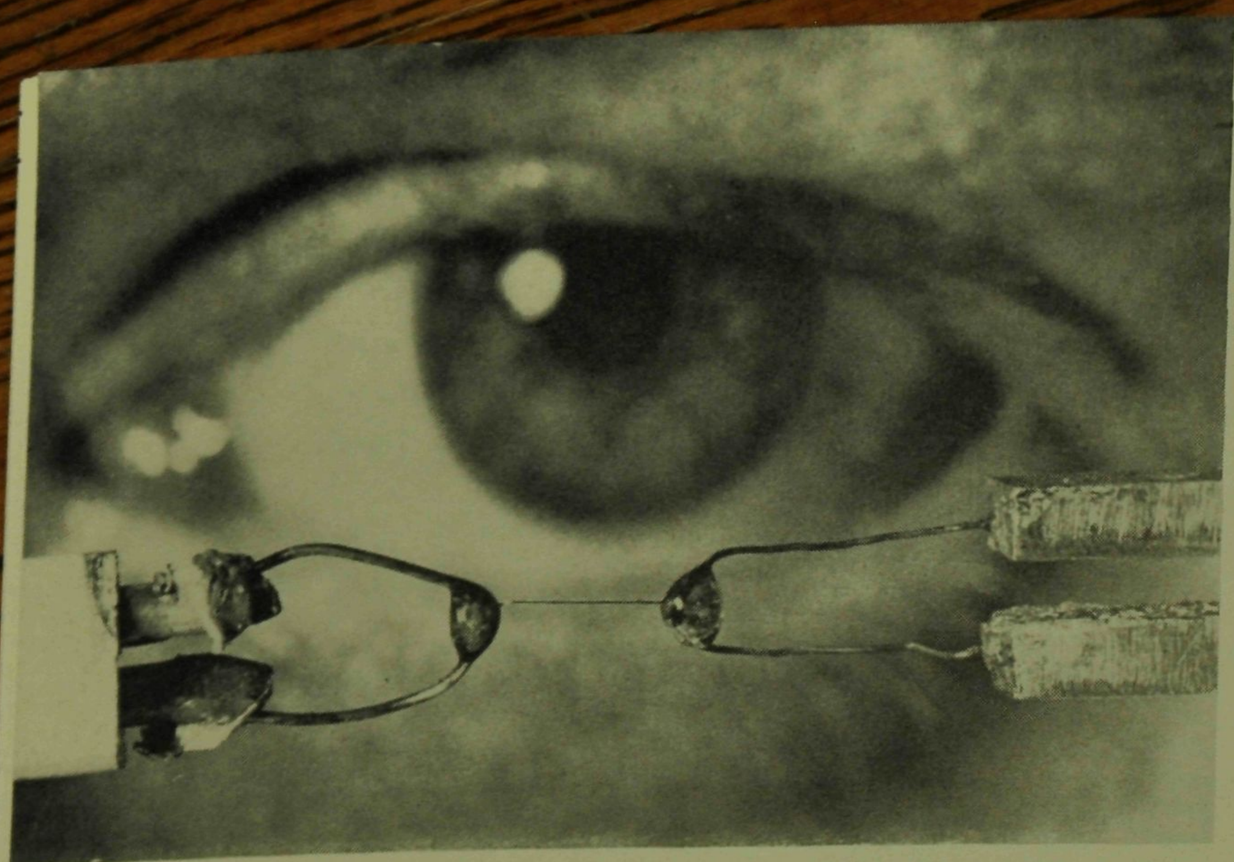
SUMMER SCIENCE TRAINING SCHOLARSHIPS

sponsored by the National Science Foundation

Outstanding high school students, both boys and girls, who will be seniors in September, 1960, are eligible and are invited to apply for appointments this summer, and for living-expense grants when financial need requires. The program will last six weeks, June 13 to July 22, and will include lecture-discussions, laboratory and research visits, and problem-solving periods. University housing and meals will be arranged, with counselors, and University recreation facilities will be available.

The program is intended to provide participants with a broad background for college study of engineering or science, and to improve integration of senior-year courses. Subject matter will include past achievements in engineering and science, current research and practice, and future needs. Lectures will be given by local and visiting professors in special fields, and opportunities will be provided for personal contacts with research project directors and scientists.

Further information and application forms can be obtained from the Department of General Engineering, 117 Transportation Building, or by writing Professor Jerry S. Dobrovolny, Director of the program for the College.



A single crystal "whisker" of pure iron, an extremely strong metallic form, which will be contrasted with other metal structures or states in the Metallurgical Engineering demonstrations and displays

OPEN HOUSE COORDINATING COMMITTEE

FACULTY ADVISERS

R. J. Beals, CHAIRMAN, *Ceramic Engr.*

F. G. Bauling	*T.A.M.*	L. J. Koester, Jr.	*Physics*
H. H. Beaty	*Agric. Engr.*	S. L. Paul	*Civil Engr.*
E. J. Brown	*Mech. Engr.*	J. A. Quinn	*Chem. Engr.*
G. R. Eadie	*Mining Engr.*	P. F. Schwarzlose	*Elec. Engr.*
H. H. Hilton	*Aero. Engr.*	W. L. Shick	*General Engr.*
		C. M. Wayman	*Metallurgical Engr.*

DEPARTMENTAL REPRESENTATIVES

Dept.	*Senior*	*Junior*
Aero. Engr.	Richard Bielawa	Robert Liebeck
Agric. Engr.	Delmar Nelson	Rollin Strohman
Ceramic Engr.	Robert Baker	William Long
Chem. Engr.	Thomas Trousil	Philip Gresho
Civil Engr.	Gerald Hoff	
Elec. Engr.	Charles Evans	Oren Kesler
General Engr.	Thomas Prickett	Francis Saliamonas
Indust. Engr.	Leon Zeter	Mike Liberta
Mech. Engr.	William Sailors	Leo Castelein
Metall. Engr.	Richard Larson	Robert Wittman
Mining Engr.	Ronald Sprague	James Driver
Physics	John Clem	Allan Barger
T.A.M.	John Melvin	Virgil Lenzi
Air Force	Robert Gibson	John Daniels
Army Engrs.	George Roman	James Govaia
Army Ordnance	Gerald Jahnke	James Mitchell
Signal Corps	John Frank	Gary Wieting
Navy ROTC	Midn. L. A. Horve	Midn. D. R. Chamberlin